SECTION L (EDUCATION).—Prof. J. Adams, president of the section, has selected as the subject of his address, the possibility of objective standards in education. His aim is to estimate how far education has progressed in its way to be a science, and, with this in view, he proposes to examine the various developments of experimental work in psychology and pedagogy. In the section itself, the papers and discussions will centre chiefly in the subjects which for some years past have been arousing popular interest. Thus the chief matters already down for consideration are vocational training, the present position of mathematical teaching, the psychological processes involved in learning to read, write, and spell, with special reference to their practical bearings, leaving certificates, and the Scottish Education Department. In the discussion of vocational training, Miss Faithfull, of the Cheltenham Ladies' College; Miss Burstall, of the Manchester High School; Mr. J. L. Holland, director of education to the Northamptonshire County Council, Mr. J. W. Peck, clerk to the Edinburgh School Board; and Dr. Morgan, president of the Educational Institute of Scotland, have promised to take part. The discussion on the present position of mathematical teaching is particularly opportune, as it was Prof. Perry's paper on "The teaching of Mathematics," read at the Glasgow meeting of the association, that was responsible for developments that are now being criticised. Among those who have promised to take part are Sir Oliver Lodge, Prof. Perry, Dr. T. P. Nunn, Dr. Pinkerton, Mr. W. P. Milne, and Mr. W. D. Eggar. The discussion on the psychological processes involved in learning to read, write, and spell has been organised by the sectional committee on mental and physical factors involved in education. Papers will be read by Miss Foxley, Prof. Green, Dr. Rusk, Mr. F. Smith, Mr. Dumville, and it is hoped that Dr. C. S. Myers, Mr. Bompas Smith, Dr. Rivers, Mr. W. McDougall, Dr. Wm. Brown, and others will attend and take part in the discussion. The discussion on the Scottish Education Department is to be opened by Principal Sir James Donaldson, and Mr. J. Strong will deal with the Scotch leaving certificate. The reports to be presented to the section deal with the question of overlapping between school and university, the relation of school-books to eyesight, and tests for mental defect.

SECTION M (AGRICULTURE).—The first meeting of the new section of the British Association—Section M (Agriculture)—promises to be of very special interest and importance to the great industry which it is designed to help by the promotion of science in this direction. The district round Dundee is famous for more than one branch of farming, which has been carried to a high degree of perfection, and the following programme shows that the local interests have been made a special feature. On Thursday, September 5, the presidential address will be given by Mr. T. H. Middleton. The remainder of the day will be devoted to papers dealing with milk. On Friday, September 6, Mr. R. H. Rew, of the Board of Agriculture, will read a paper on the sources of the nation's food supply, and Major P. G. Craigie, C.B., will contribute a paper on Scottish agricultural production —half a century's changes. A paper will also be contributed by Prof. J. Wilson, on a consideration of the profits realised from the usual field crops, more especially from temporary pasture. The remainder of the day will be devoted to two special papers on the agriculture of the district. On Monday, September 9, a joint meeting will be held with the Meteorological Department of Section A, the subject being the connection between meteorology and agriculture. Dr. W. N. Shaw, F.R.S., will read a paper on the practice of cultivation in relation to our knowledge of climate and weather, and Mr. A. Watt, secretary of the Scottish Meteorological Society, will open the discussion. Other general papers on this day will deal with the action of quicklime on soil, studies on nitrogen fixation, the rate of evolution of hydrocyanic acid from linseed, the influence of origin and topography on grass lands, and the problem of disease resistance. On Tuesday, September 10, will be held a joint meeting with Section I (Physiology) on the important subject of animal nutrition. The discussion will be opened by Prof. F. G. Hopkins, F.R.S., and continued by Prof. Leon Asher (Berne), Dr. E. P. Cathcart, Dr. C. Crowther, Dr. Leonard Hill, and Dr. Martin Flack, Prof. J. J. R. Macleod (U.S.A.), and Prof. T. B. Wood. This is the first time within recent years—if not the first time at all—when the practical feeder and the physiologist have met, and when the stores of knowledge and experience of the practical man have been drawn upon by the man of science.

NOTES.

WE are informed by the Royal Society that the Mackinnon studentships for the ensuing year have been awarded to Dr. H. M. Kyle (St. Andrews) for a research on the metamorphosis and origin of the flat fishes, and to Mr. A. L. Hughes (Emmanuel College, Cambridge), for a research on the ionisation in mercury vapour produced by ultra-violet light.

THE John Harling fellowship for the encouragement of the study and research in physical science in the University of Manchester, has been awarded to Mr. H. G. J. Moseley, who was until recently an assistant lecturer and demonstrator in the department of physics in the University, and to Dr. T. S. Taylor, now instructor of physics in the University of Illinois.

THE Franklin Institute of Philadelphia, Pa., has awarded the Edward Longstreth medal of merit and diploma to Dr. Charles Baskerville, professor of chemistry and director of the laboratory at the city of New York, for his investigations on the chemistry of anæsthetics.

AMONG the victims of a terrible colliery accident at the Cadeby Pit, Yorkshire, on Tuesday, July 9, were three inspectors of mines, including Mr. W. H. Pickering, chief inspector for Yorkshire and the North Midlands. An explosion took place in the main pit early in the morning, and thirty men were killed by it. A rescue party was at work in the pit later in the day when several additional explosions occurred, and many other lives were lost, among those who suffered death while in the work of rescue being Mr. Pickering. Mr. Pickering was a Fellow of the Geological Society and the author of papers in the Transactions of the Institution of Mining Engineers and other societies. He was an authority on English and Indian coal mining, and founded the Mining and Geological Institute of India. His death will be deeply regretted by a wide circle of friends.

A COMMUNICATION of Prof. C. D. Perrine to the issue of *Science* of June 28 states that upon the recommendation of the Minister of Public Instruction the Argentine Congress has provided in its budget for 1912 a 5-ft. reflecting telescope for the National

Observatory at Córdoba. It is expected to erect this telescope in the mountains to the west of and close to Córdoba, where preliminary investigations have already been made and the meteorological conditions found to be good.

As was announced in the issue of NATURE for January 4 last, the Congress of the Royal Sanitary Institute will be held this year at York on July 29–August 3. The names of the presidents of the various sections into which the work of the congress is divided have already been given. It is now known that the lecture to the congress will be delivered by Prof. Karl Pearson, F.R.S., his subject being "Eugenics and the Public Health." Prof. H. R. Kenwood will give the popular lecture on "The Healthy Home." More than 250 authorities, including foreign and colonial Governments, Government departments, county councils, universities, and societies have already appointed delegates to the congress, and a large attendance is expected. A health exhibition of apparatus and appliances relating to health and domestic use will be held in illustration of the principles and methods discussed at the meetings. Excursions to places of interest in connection with sanitation, a conversazione, garden-parties, and other entertainments have been arranged.

THE International Radio-telegraphic Conference, which has been sitting in London since June 4, has concluded its meetings, and an official statement has been issued showing the main points of the resolutions considered and new regulations proposed. Special consideration was given to the question of the use of wireless telegraphy for the prevention of disasters at sea, and after full discussion the conference passed unanimously a resolution in favour of the principle of compulsory equipment of ships with wireless telegraphy. The new regulations contain several provisions intended to render more effective the service of wireless telegraphy in cases of distress at sea. Ships will in future be required to provide an auxiliary source of power able to work the wireless apparatus for at least six hours. Rules have also been made for both ship and shore stations to suspend work and to listen at the end of each quarter of an hour in cases where it is likely that distress calls might otherwise not be heard. Provision has been made for giving priority of transmission to weather reports from ships and for keeping coast stations supplied with weather forecasts for communication to ships on demand. It is now agreed that all ships should be under the obligation to intercommunicate with one another, irrespective of the system of radiotelegraphy employed. An invitation to hold the next conference in Washington was unanimously accepted, and 1917 was fixed as the date at which the conference will be held.

IN *Man* for June, Mr. C. M. Barreau contributes a paper on the bearing of the heraldry of the Indians of the north-west coast of America upon their social organisation. The intricate system of clans with their phratries is clearly explained, and it is shown that two modes of social grouping prevail in the Kwakiutl tribe. In summer they are arranged in clans, but this organisation is broken up in winter, when they arrange themselves in two large fraternities. This is due to the fact that while the child may belong either to the clan of the mother or father, his right to admission into a fraternity may not only be inherited from his parents, but is often secured by payment or by other means. These fraternities are concerned with ritual dances, dramatic performances and potlatches or feasts, while others initiate members in order to cure disease or practise sorcery. Each clan bears a representation of the animal or object after which it is named, and through which the members are connected by ties of special affinity.

IN *L'Anthropologie* for March-April, Dr. G. Lalanne, under the title of "Bas-reliefs à figuration humaine de l'abri sous roche de Laussel (Dordogne)," describes two remarkable rock carvings, one of a male, the other of a female. The block on which the female carving appears now lies outside the excavation. It represents a woman in profile, holding the horn of a wild ox in her hand, but nothing remains to indicate the expression or the mode of arrangement of the hair. It is apparently of the Palæolithic type which has already been discovered at Brassempouy in the Landes, Menton, and Willendorf in Austria. These discoveries appear to indicate that in the Aurignacian period Central Europe, and possibly the Mediterranean area, were occupied by a negroid race, characterised in the female by well-marked steatopygy, such as that which appears among the modern Bushmen. The male image, on the other hand, displays a delicacy of form which is in direct contrast to that of the female.

IN the June number of *The Zoologist*, Col. Shepherd continues his account of the pharyngeal teeth of fishes, dealing in this instance with those of the carp group (Cyprininæ), in which the lower pharyngeal teeth bite against a callous pad.

WE are glad to see that public interest is being aroused in the potential dangers connected with the house-fly. The case against the insect is stated in a striking article in the July number of *Pearson's Magazine*, which contains the views of several authorities upon public health as to the dangers of its presence. House-flies play no inconsiderable part in the dissemination of certain diseases, and every encouragement should be given to a campaign which aims at reducing their numbers.

To the *Revue générale des Sciences* of June 15 Mr. Louis Gain, naturalist to the second French Antarctic expedition, contributes a very fully illustrated account of the distribution and habits of the Adélie penguin (*Pygoscelis adeliae*). This bird, which was first met with by Dumont d'Urville in 1841, may be considered the most characteristic inhabitant of the Antarctic continent and islands, never ranging to the northward of 60° S. lat., and communicating, even when not seen, a sign of life to these dreary regions by its oft-repeated, although harsh, cry of *kaah, kaah.*

RECENT observations seem to show that certain yeasts and yeast-like forms may undergo a process of conjugation in some part of their life-cycle. The process differs considerably in different species. In the Schizosaccharomyces and Zygosaccharomyces the ascus is formed by conjugation of two cells recently derived from a single parent cell. In Debaryomyces the ascus is derived from the fusion of a large cell (macrogamete) with a small cell (microgamete), the former being a mother cell, the latter being a bud derived from this mother cell. In *Saccharomyces ludwigii* and *S. ellipsoideus*, conjugation takes place between the formed ascospores at the moment of their germination. In certain sporing bacteria also, conjugation is stated to occur between sister cells, the zygote giving rise to the spore (A. Nadson and H. Marchand, refs. in *Bull. de l'Inst. Pasteur,* x., 1912, No. 10, pp. 447 and 449).

WE have received a copy of a reprint from an article in vol. iv. of *Verhandl. Naturwiss. Ver. in Karlsruhe,* published by G. Braunsche, of that city, and entitled, "Gomera, die Waldinsel der Kanaren." It is the journal of a German naturalist, who made a traverse and a perambulation of that little-known island for the purpose of studying its biology, inclusive of that of the coast. Although Gomera, which lies somewhat to the south of a point midway between Teneriffe and Las Palmas, forms little more than a dot on our maps of the world, it is really a microcosm, containing as it does lofty mountains, deep valleys, steep cliffs, primeval forests, and many streams and waterfalls, together with ancient towns and villages, and a population numbering thousands. The journal is well illustrated, and contains a list of the animals (of which a few are new) and plants collected by the author.

IN the June issue of *The Journal of Economic Biology,* the editor, Mr. W. E. Collinge, fully endorses the unanimous verdict of gardeners and fruit-growers as to the extremely mischievous nature of the bullfinch, and the great increase in its numbers which has taken place of late years in this country. Mr. Collinge's observations are based on an analysis of the contents of the stomachs of 308 of these birds, which were killed at different seasons in five counties. As the result of this analysis, it was found that from January to May the food of the bullfinch "consists largely of fruit-buds and fruitlets, and in addition to those which are eaten, an equal, or even larger, number are wantonly destroyed by this bird." The author then goes on to observe "that the bullfinch is for quite half the year most destructive in fruit orchards, causing considerable losses to growers, which far outweigh any little good it may do in keeping down the spread of weeds. Indeed, its value in this respect is extremely doubtful, for it certainly helps in the distribution of such weeks as dandelion, dock, groundsel, ragwort, charlock, &c." Although he does not say so in so many words, Mr. Collinge is evidently of opinion that the numbers of these mischievous birds ought to be largely reduced.

THE Bulletin of the Department of Agriculture, Trinidad and Tobago, deals with sugar, cacao, cocoanuts, rubber, and other crops. Mr. Gough has drawn up a useful list of the fungoid parasites of the sugarcane observed in Trinidad, the material being partly collected by himself and partly gathered from records by Went, South, and others. A report is given of the exhibit of rubber sent to the International Rubber Exhibition of 1911, which was considered by the experts to be promising, and to indicate that the West Indies, though behind the big plantation centres of Ceylon and Malaya, are fast improving, and may become serious competitors in a few years.

THE report of the entomologist for the Dominion of Canada (Dr. C. Gordon Hewitt) shows that the enactment of the Destructive Insect and Pest Act came none too soon, for serious losses have arisen through the attacks of pests imported into Canada with nursery stock from all parts of the world. The brown-tail moth (*Euproctis chrysorrhoea*) has caused a great amount of trouble, having increased very much in certain areas of Nova Scotia and New Brunswick. A systematic campaign has now been started against it. The gypsy moth, narcissus fly, and larch sawfly are under investigation, and other pests are also being studied.

A SERIES of papers is to hand from the Biological Laboratory of the Maine Agricultural Experiment Station, in which Dr. Pearl describes his recent investigations into heredity in poultry and in maize. Fecundity is a highly desirable property in poultry, but it is not a unit character, and no line could be obtained that is absolutely pure in this respect. Lines were studied, however, which breed reasonably true to a definite degree of fecundity, and an analysis of the results is made. The results with maize indicate that certain chemical characters are inherited in essential accordance with Mendelian principles, exhibiting the phenomena of dominance, recessiveness, and segregation. The interesting fact is that no visible character seemed to be correlated with these chemical properties.

A VERY complete account of the fig moth (*Ephestia cautella,* Walk.), by Dr. Chittenden, has been issued as Bulletin 104 of the Bureau of Entomology, United States Department of Agriculture, and in it is incorporated a report by E. G. Smyth of the fig moth in Smyrna. A large proportion of the imported figs were found to be badly infested with this pest, sometimes from 15 to 50 and even higher percentages of infested fruit being present. The approximate proportion was estimated from the amount of excreta. The insect lives on a number of dried foods, and is a serious pest of chocolate; some of the infested material is said to be on the market.

THE first part of vol. iv. of the Journal of the College of Agriculture, Imperial University of Tokyo, is devoted to two papers by Prof. S. Kusano. One of these deals with *Gastrodia elata* and its symbiotic association with *Armillaria mellea.* The orchid Gastrodia is widely spread throughout Japan, and is found growing on rich organic soils, mostly in *Quercus serrata* and *Q. glandulifera* woods. The fungus Armillaria is associated with the orchid, but the relationship is not quite of the usual mycorhiza type, and the exchange of nutritive substances is not equal; Gastrodia appears to be a parasite on the fungus, which suffers by the association.

Recent issues of *The Agricultural Journal of the Union of South Africa* have contained a series of interesting papers by Dr. Theiler on gall sickness in cattle. The disease shows certain relationships with redwater, and is caused by parasites of the red blood corpuscles, which are called anaplasms to mark their analogy with the piroplasms causing redwater, and are transmitted by ticks. Mr. Burtt-Davy contributes papers on poisonous plants found in the country. Many of these are known to the natives, some being used for arrow poisons, others for criminal purposes, while others again are used by the Kaffir doctors, who, however, have kept their knowledge so secret that white men have been unable to obtain it. Attention is directed in other papers to the value of the fig crop and the methods of working it up for the market.

An interesting lecture on the investigation of the highest strata of the earth's atmosphere by Dr. A. Wegener (Marburg University) is printed in *Himmel und Erde*, Heft 7, 1912. He refers to the great discoveries made by meteorological observations in kites and balloons, which have already placed our ideas of the structure of the atmosphere on quite a new basis. The decrease of temperature with altitude was formerly considered to continue to the limits of the atmosphere, but the observations above referred to have shown that the decrease ceases at an altitude of about 11 kilometres, and that higher temperatures are recorded at much greater heights. But it is not with these low altitudes that Dr. Wegener is mostly concerned, but with the regions in which certain luminous phenomena are frequently observed, which show that at heights exceeding 200 and possibly 500 kilometres an atmosphere of appreciable density still exists. The article is accompanied by some excellent photographs of auroræ and meteors, and with opinions of different investigators relating to them. The author's investigations have led him to conclude that in the highest strata there must be an unknown gas, in addition to hydrogen, and lighter than this. For this gas he proposes the name "geocoronium," from its similarity to the unknown "coronium" of the solar atmosphere.

Few places have suffered so repeatedly from destructive earthquakes as the island of Zante. Since the Venetian occupation of the island in the fifteenth century, there have been nineteen disastrous shocks, the two latest of which occurred on January 24 and 25 of the present year. These earthquakes and their successors form the subject of an interesting paper by Mr. G. Bonavia, the director of the Eastern Telegraph Company in Zante (*Boll. della Soc. Sismol. Ital.*, vol xvi., 1912, pp. 59–67). The epicentre was submarine, and lay between the islands of Zante and Cephalonia, but probably nearer to the latter, since it was in this island that the principal disasters occurred. Up to the end of April, the two initial destructive shocks have been followed by twelve strong, thirteen moderate, and forty-eight slight shocks.

Mr. Versfeld has recently examined geologically two areas in German South-west Africa, and has reported the results of his survey in the *South African Journal of Science* (vol. vii., 1911, No. 8, pp. 332–339, with two maps). He describes a part of the country extending from the Orange River for two hundred miles northward, and including the area around the hot springs of Warmbad. Most of the country is occupied by gneiss and granite covered with outliers of the Table Mountain Sandstone, upon which rest patches of Dwyka conglomerate. This ancient glacial deposit must have been very widely spread across the district, and at different places rests directly on all the rocks present. It is the youngest rock represented in the area, so that Mr. Versfeld concludes that the district has been a land surface since Carboniferous times. The second part of this report deals with the diamantiferous gravel along the coast near Luderitz Bay. The gravel has been described as Cretaceous and as marine, owing to the presence of marine shells; but these so-called fossils are only recent mussels and limpets which have been carried inland by the Hottentots. Mr. Versfeld explains the gravel as a subaërial deposit, and regards the diamonds as part of the débris from many diamond pipes. The statement that the matrix of the diamonds had been discovered in the district rests upon their occurrence in some cemented gravels.

We have received a separate copy of Prof. Mie's paper on the foundations of a theory of matter which appeared in the *Annalen der Physik* for March. The theory is founded on the assumption that electric and magnetic fields occur within, as well as without, an electron; that electrons, in fact, are not bodies embedded in the ether, but portions of the ether itself in a special state, which we designate electrically charged. With the further assumption that the principle of relativity holds and that the electric and magnetic fields, the electric charge and its velocity suffice to specify completely all phenomena of the ether, Prof. Mie proposes to explain in the first instance why indivisible electrons exist, and why the existence of matter should imply necessarily the law of gravitation. Further instalments of his paper will be awaited with interest.

The early history of Chinese mathematics is discussed in a short note by Prof. D. E. Smith in *The Popular Science Monthly* for June. That the Chinese were not behind other nations in their study of geometry and algebra is shown by (*a*) references to the Pythagorean proposition and a primitive trigonometry in the *Chow-pi* (supposed 1100 B.C.); (*b*) Chang Tsang (152 B.C.), who restored the "Arithmetical Rules in Nine Sections" (possibly 2650 B.C.), containing use of negative numbers, trigonometry of right triangles and simultaneous equations; (*c*) Sun-tsu's anticipation of the Diophantine analysis (probably in the third century); (*d*) the approximations to π, by Tsu Ch'ung-Chin (428–499 A.D.), including the limits 3·1415926 and 3·1415927; (*e*) Wang Hs'iao-t'sing's approximate solutions of the cubic in the seventh century. About the thirteenth century we find anticipations of Horner's method, analytical trigonometry, the so-called Pascal's triangle, spherical astronomy, and other work which leads the author to describe the period as the golden era of native Chinese algebra.

WE have received from Messrs. Ozonair, Ltd., 96 Victoria Street, Westminster, London, S.W., a copy of their catalogue of Ozonair portable generators for purifying the air in rooms of from 3000 to 12,000 cubic feet capacity, the current being derived from the supply circuits or from portable accumulators. As the consumption of power is only from 10 to 130 watts, the apparatus can be connected to any lampholder or plug. The makers claim that their apparatus generates ozone which is practically free from oxides of nitrogen.

THE French Société de Chimie-physique is publishing a series of monographs or lectures upon important topics in physical chemistry. Two of these, by Prof. Arrhenius, "Sur les atmosphères des planètes," and by Prof. Gaubert, "Recherches récentes sur la formation et le facies des cristaux," were issued in 1911; two further issues have just come to hand. These include a series of lectures on alloys by Messrs. Rengade, Jolibois, and Broniewski, and a lecture on "La pression osmotique et le mécanisme de l'osmose," by M. Pierre Girard. The lectures on alloys deal with thermal analysis and microscopic metallography, chemical methods applied to the study of alloys, and the relationship between the structure of alloys and their electrical properties. The lecture on osmotic pressure forms a valuable historical and critical review of the theory of osmotic pressure.

IT is often a tedious process to obtain sulphuric acid of the necessary degree of purity for detecting or estimating minute traces of arsenic. In the *Gazzetta Chimica Italiana* (vol. xlii., i., 456) a simple process is described by G. Bressanin for this purpose. It consists in adding 10 c.c. of a 30 per cent. solution of hydriodic acid to a litre of the sulphuric acid, diluted to 50° Bé., leaving for twelve hours for the arsenic to separate, together with other metals, such as lead, tin, and copper, filtering through glass wool covered with a thin layer of asbestos, and finally boiling in a Jena glass vessel to expel the iodine liberated.

UNDER the title, "Solid Solutions of Iodine in certain Cyclic Hydrocarbons," some interesting observations are recorded by G. Bruni and M. Amadori in the *Gazzetta Chimica Italiana* (vol. xlii., p. 121). It has been known for some years that iodine gives abnormally high values for the molecular weight determined by the cryoscopic method, using benzene as solvent, and Beckmann concluded that this was due to some of the iodine separating with the congealing solvent in the form of a solid solution. In the paper now cited it is shown that *cyclo*hexane, C_6H_{12}, which Mascarelli in 1907 found to form solid solutions with benzene, behaves cryoscopically with iodine exactly in the same way as benzene itself, giving values ranging from 310 to 320 for the molecular weight of iodine instead of 254, calculated for I_2. When a very dilute solution of iodine in benzene or *cyclo*hexane is cooled in carbon dioxide snow, the colour of the solution is scarcely changed at all on solidification owing to the formation of the solid solution; whereas, with an ordinary solvent, such as bromoform or ethylene bromide, which gives normal values for the molecular weight, on solidification the reddish-violet colour disappears to give place to an opaque-greyish appearance, due to minute solid particles of free iodine separating.

SEVERAL important papers in the series dealing with water supply have recently been issued by the United States Geological Survey. They deal with the basin of the Missouri, with the lower basin of the Mississippi, with the rivers draining to the western Gulf of Mexico, and with California. It is pointed out in the general introduction to these papers that it is necessary to apply the money appropriated for the work over a wider field than it would be if only the scientific value of the work were under consideration. The appropriations made by Congress are applicable to all parts of the country, and each part demands its proportionate share of the benefits. It has been found, nevertheless, that the work of the Survey in this direction is of great practical value. Records have been obtained at nearly 2000 different points in the United States, including the reading of gauges, the measurements of discharge, precipitation, evaporation, reservoirs, river profiles, and water power, and some investigations have been made also in Alaska and Hawaii. In a special report on the Antelope valley of California, an interesting review is given of the manner in which land was taken up there in the early 'eighties without any knowledge of the available water supplies, how many farms failed in consequence, and even towns were left derelict, and how part of the country has subsequently been brought under cultivation by means of a careful system of irrigation.

OUR ASTRONOMICAL COLUMN.

MAGNITUDE OBSERVATIONS AT HARVARD COLLEGE OBSERVATORY.—An important contribution to stellar photometry is published in Circular No. 170 of the Harvard College Observatory, where Prof. Pickering gives the adopted magnitudes of ninety-six stars measured in the Harvard polar sequences. The first table gives the magnitudes of forty-six stars in the north polar sequence, the second the magnitudes of twelve stars in the N.P. sequence of red stars, and the third the magnitudes of thirty-eight supplementary standard stars near the north pole. Having had access to a large number of plates taken with different instruments, *e.g.* the 60-inch reflector at Mount Wilson, Prof. Pickering is able to give magnitudes down to the twenty-first; on a plate accompanying the circular an excellent photograph taken with the 60-inch reflector, and showing the stars near the north pole, is reproduced.

The periods of twenty-two variable stars are given in the same circular, with some interesting notes concerning the variations, in some cases irregular, and their connection with possible changes in the spectra.

In Circular 172, Prof. Pickering shows that amateur observers might perform valuable service to astronomy by observing the photographic magnitudes of asteroids and gives lists of suitable asteroids and data concerning them for the current year. The variability of polaris is discussed, from the Harvard observations, in Circular No. 174, and a light-curve showing the nature of the changes is given.